Claims

WE CLAIM:

1. A fiber optical device comprising:

one or more substrates;

an array of filters, each of the filters having a designated spectral response to transmit only a predetermined wavelength and reflect other wavelengths,

an array of collimators, each aligned respectively with one of the filters and bonded via one or more wedges to the one or more substrates.

2. The optical device of Claim 1 further comprising:

an array of mirrors configured to successively reflect the reflected other wavelengths to the array of filters.

3. The optical device of Claim 1, wherein the one or more wedges are inserted into gaps between one of the collimators and the one or more substrates to hold up aligned positions of the one of the collimators.

4. The optical device of Claim 3, wherein the one of the collimators is bonded to the one or more wedges on respective contacts therebetween by applying a bonding agent thereto.

5. The optical device of Claim 4, wherein the one or more wedges are bonded to the one or more substrates to secure aligned positions of the one of the collimators.

6. The optical device of Claim 3, wherein each of the wedges is so shaped that sliding of the wedges into the gaps will not flip over or up the one of the collimators when being pushed to slide in.

7. The optical device of Claim 3, wherein each of the wedges has a cross-section shaped substantially like a right triangle.

8. A method for configuring an optical device, the method comprising:

placing an array of filters on a substrate, each having a designated spectral response to transmit only a predetermined wavelength and reflect other wavelengths;

aligning an array of collimators with the filters, each of the filters corresponding to one collimator in the array of collimators and transmitting the predetermined wavelength to the collimator;

sliding two wedges respectively towards the collimator till respective contacts between the two wedges and the collimator are established; and

applying a small amount of bonding agent to the respective contacts to bonding the collimator and the wedges so that aligned positions of the collimator are secured.

9. The method of Claim 8 further comprising bonding the two wedges to the substrate.

10. The method of Claim 9, wherein each of the wedges has a cross-section shaped substantially like a right triangle having a hypotenuse thereof so that each of the wedges has a sliding side on the hypotenuse.

11. The method of Claim 9, wherein the sliding of the two wedges respectively towards the collimator comprises facing down the sliding side of each of the wedges; and pushing each of the wedges slowly towards the collimator till the respective contacts are respectively established.

12. The method of Claim 11, wherein each of the wedges is so shaped that the sliding of the two wedges respectively towards the collimator will not flip over or up the collimator that has been already aligned with one of the filters.

13. The method of Claim 12, wherein each of the wedges has a cross-section shaped substantially like a right triangle.

14. The method of Claim 8, wherein aligned positions of the collimator with respect to one of the filters are securely held up by the wedges.

15. The method of Claim 8, wherein the placing of the array of filters on the substrate comprising:

placing an array of mirrors configured to successively reflect the reflected other wavelengths to each of the filters; and

adjusting an incident angle of each of the filters to ensure that the transmitted wavelength goes into a corresponding one of the collimators.

16. A fiber optical device comprising:

a substrate;

a first and a second array of filters, each of the filters having a designated and distinct spectral response to transmit only a predetermined wavelength and reflect other wavelengths,

a first and a second array of collimators, each aligned respectively with one of the filters and bonded via one or more wedges to the substrate, and

wherein a multiplexed signal come into one of the filters in the first array that transmits a first predetermined wavelength in the multiplexed signal to one of the collimators in the first array and reflects the other wavelengths in the multiplexed signal to one of the filters in the second array that transmits a second predetermined wavelength in the multiplexed signal to one of the collimators in the second array.

17. The method of Claim 16, wherein each of the wedges has a cross-section shaped substantially like a right triangle.

18. The method of Claim 16, wherein the wedges are respectively filled in gaps between one of the collimators and the substrate, and wherein the gaps are created to align one of the collimators with respect to a corresponding one of the filters.